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REPLACING TRADITIONAL MATERIALS WITH MORE SUSTAINABLE ONES: THE USE OF PHRAGMITES AUSTRALIS (CAV.) TRIN. EX STEUD. AS BIO-BUILDING MATERIAL AND PELLET

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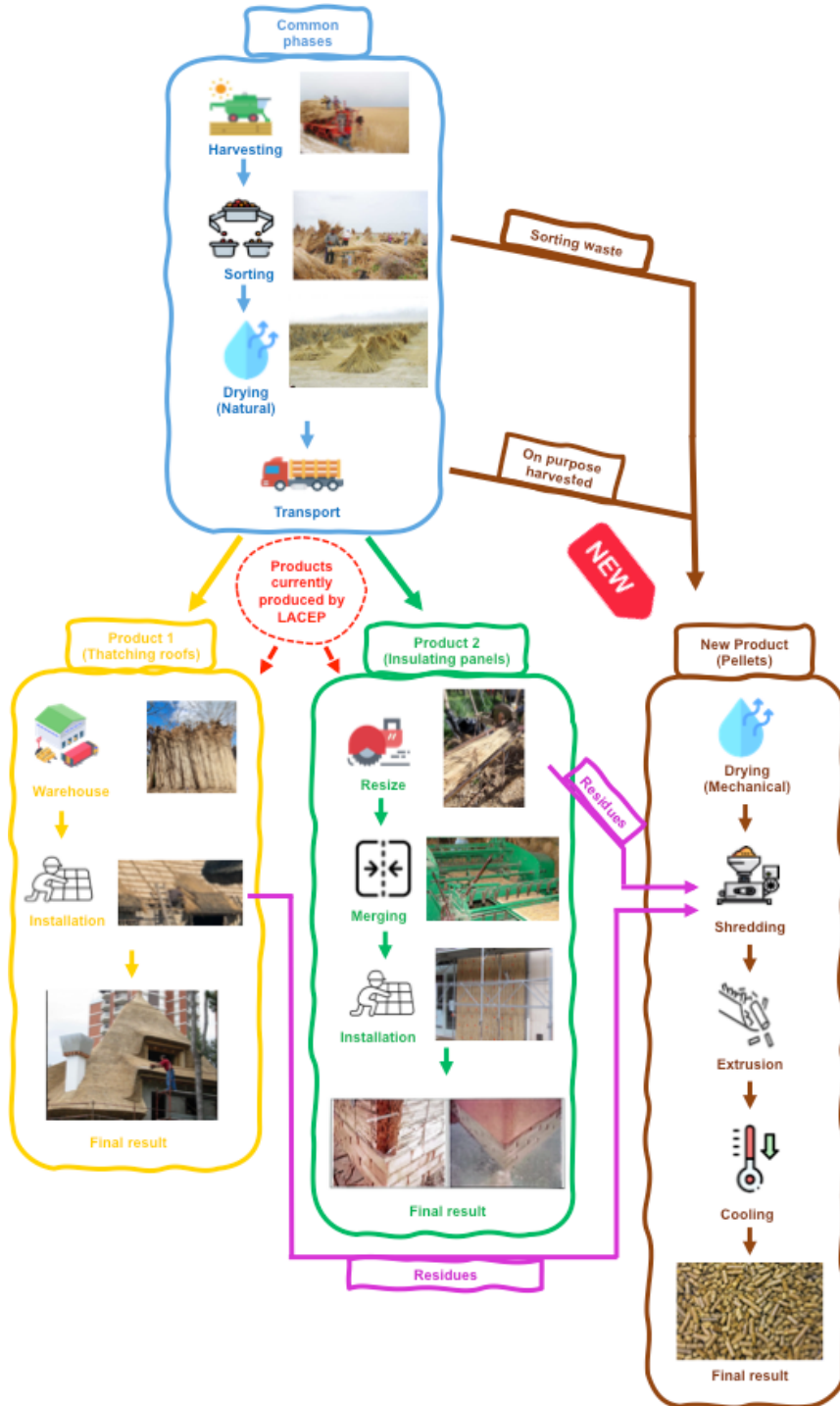
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Abstract – Considering the hazardous future scenarios outlined for the environment by the scientific community and various institutions, embracing more sustainable production methodologies is imperative. This is especially vital within the construction and energy sectors, which stand as significant contributors to climate change and environmental impact. The topic presented herein aligns with this direction. Specifically, the aim of this study is to highlight the benefits of transforming conventional agriculture into a technologically advanced and environmentally sustainable practice. The proposed study is being carried out with the cooperation of a strategic partner operating in the bio-building sector from many decades. Two of the company's main products are the insulating panels and the thatching roofs made with the stems of *Phragmites australis* (Cav.) Trin. ex Steud. The goal of this study is twofold: on one hand to investigate the reduction of environmental impacts using reeds artifacts instead of traditional materials in the construction sector; on the other hand, to assume new utilization scenario for *Phragmites australis*, in order to reduce the processing waste, providing at the same time a wider range of products for consumers and a further income to the company. The hypothetical new scenario includes the production of pellets, combining the reeds harvested purposely with the processing waste or the unsuitable part of them for construction uses. All these scenarios will be investigated performing a Life Cycle Assessment, and this can be considered as a preparatory study for that kind of analysis. First of all, a comparison between the life cycle impacts of construction's products (insulating panels and thatched roofs) and the same products made with traditional materials (business as usual) will be performed. Secondly, difference in terms of impacts between reed pellets and traditional wood-pellets (business as usual) will be investigated, as well as the feasibility for the company to start this additional activity. Considering the rising attention to the environmental issues from the common people and the demand for green procurements from governments and communities, this study could provide a better company image, spendable on the market. Furthermore, the study will contribute to the achieving of 3 out 17 SDGs (Sustainable Development Goals) UN Agenda 2030, precisely No. 7 – Affordable and clean energy, Nr. 9 – Industry, innovation and infrastructure and No. 12 – Responsible consumption and production.

Keywords – Reed (*Phragmites Australis* (Cav.) Trin ex Steud.); bio-building; reeds panels; pellet; environmental impacts; alternative materials



Production Systems deriving from *Phragmites Australis*.